

REMARKS

The above-noted amendments to the claims are respectfully submitted in response to the official action dated December 5, 2008. These amendments are relatively minor in nature, and eliminate the "means" language from the claims, as well as clarifying other language therein. No new matter is included in any of these amendments.

The present invention is directed to a specific problem in a specific industry. That is, it is directed to the separation of steam from fibers in connection with the supply of fibers to a refiner in the production of pulp. This process conventionally utilizes a cyclone for the separation of a fraction of steam from a fraction of fibers prior to transporting the fibers to a refiner. The cyclone thus generally has an outlet which is arranged radially against the circumference of the feeding apparatus to supply the fibers thereto. Steam is then generally removed from an outlet in the center of the cyclone and the fiber fraction is added to the feeding apparatus. In such conventional apparatus, including the cyclone disclosed in the prior art and relied upon by the Examiner, clogging of the cyclone becomes a serious problem, even with the use of screens in the cyclone itself. One reason for this is that the loading of fibers is great in the lower part of the cyclone. In addition, various sticky materials are included in the pulp which adhere to the fibers and create deposits within the cyclone. Furthermore, the residence times for fibers in such cyclones are generally far too long, and the fibers become discolored before reaching the refiner, resulting in increased bleaching requirements. The present invention has overcome all of these problems in a manner not suggested by any of the prior art hereagainst.

Applicant initially notes that the Examiner has made reference to certain "means for" language in the claims.

However, in view of the amendments to the claims, this discussion is no longer deemed to be relevant hereto.

Claim 8 has been objected to on the basis that it fails to further limit the claim from which it depends. However, since claims 8-12 have now been canceled, this objection has clearly been obviated.

Claims 1-12 have been rejected under 35 U.S.C. § 112, second paragraph. The Examiner contends that these claims are indefinite in that the term "tubular" in claim 1 is used to mean a hollow enclosure circular, quadratic or rectangular cross sectional area, and this is said to conflict with the accepted meaning of the term. However, once again, in view of the amendments to the claims in which the term "tubular" has been eliminated, this rejection has also now been obviated.

Claims 1-12 have been rejected as being unpatentable over Nilsson in view of Stebbins under 35 U.S.C. § 103(a). Nilsson is said to disclose apparatus for separating steam and fibers with an elongated feeding compartment 6 with a inlet 3 located between the short sides thereof. Nilsson is further said to disclose a conveyor worm 10 between the short sides and the fibrous material is said to be conveyed by the conveyor worm to the pulp outlet 9, while the steam exits through outlet 5 thereof. After then admitting that Nilsson does not disclose the feeding means comprising a tubular section curved so as to separate a mixture of steam and fibers through the passage by centrifugal force, the Examiner notes that Nilsson does teach that the inlet of the blow pipe is preferentially located tangentially with respect to the vessel and concludes that tangential entry would, in fact, cause some centrifugal separation as the fiber/steam flows against the inner wall of the apparatus. Stebbins is then relied upon as disclosing a method of separating solids from gases using centrifugal force, and that, as a result of using a curved inlet pipe, the heavier particles are thrown against the outer wall of the device while the air travels to the central axis of the receptacle. The

Examiner thus concludes that it would be obvious to use the curved tubular inlet of Stebbins for the fiber/steam inlet of Nilsson, and that one would be motivated to do so as Stebbins further facilitates the separation of materials. It is said to be obvious to apply a known technique such as centrifugal separation using a curved pipe to a known device such as a screw mechanical separator to obtain predictable results.

With respect to claims 2 and 9, the Examiner contends that Nilsson can be adapted so that the difference between the velocity of the feeding means and that of the conveyor worm is minimized, and that the speed of the motor or gear reductions can change the speed of the conveyor worm or the flow of fiber/steam to the apparatus can change the speed of the fiber fed thereinto.

As for claim 3, Stebbins is said to disclose that separation is supported by a deflection plate which extends tangentially into the air removal portion of the separation device guiding relatively clean air into the exit pipe. As for claims 4 and 10, Stebbins is said to show that prior to the curved inlet the feeding means has a substantially straight linear elongated outer tube portion positioned adjacent to the opposite end of the curved tubular section.

As for claims 5 and 11, Nilsson is said to disclose that mechanical separator devices can be positioned from 0° to 90° and further that the mechanical separator is at 0° (horizontal) and the inlet feeding means forms a 90° angle in relation to the horizontal laying mechanical separator.

As for claim 6, Nilsson is said to teach that the inlet of the blowpipe is preferentially located tangentially respecting the vessel. With respect to claims 7 and 12, the cross-section inlet of the curved tube of Stebbins is said to be rectangular. This rejection is respectfully traversed in view of the above amendments and arguments and for the reasons set forth hereinafter.

Turning first to the primary Nilsson reference, it is noted that the apparatus shown therein includes a preheater 1

for chips, so that the heated chips can then be fed to a defibrator or refiner 2. The mixture of refined pulp and steam generated in the defibrator then passes through blowpipe 3 into vessel 6 shown in Fig. 3. While this blowpipe runs directly from the grinding housing to a steam separator 4, and it is preferably located tangentially with respect to vessel 6, it nonetheless feeds the mixture of steam and pulp directly into the section 4 without any attempt to separate steam from pulp before entry into this housing. Tangential location of the blowpipe does not alter the direct flow of pulp and steam linearly into the separator 4, and does not create any separation of steam and pulp at all, and certainly not at the point of entry into the separator. Furthermore, the blowpipe 3 is located before the compressing portion 7 and adjacent to the open portion 8 so that steam can then pass to the steam outlet 5 for return to the preheater for use therein. The compressing portion 7 then compresses the pulp material into a plug flow for removal therefrom.

As is discussed in the background section of the present application, as well as hereinabove, the use of apparatus such as that shown in Nilsson has been well known, as has been the use of a cyclone to separate pulp from steam, and it is precisely this prior art which applicant has improved upon to such a substantial degree.

When it is realized that Stebbins discloses a cyclone, but does not even do so in the context of steam and pulp separation as in Nilsson, it becomes clear that the present invention and its improvement over the prior art is not obviated in any way by this combination of references.

Turning to Stebbins itself, the Stebbins patent is directed to an air classifier for separating heavier and lighter particles from each other. Thus, in accordance with this cyclonic apparatus, material laden air is supplied by pipe 13

into receptacle 10, which then has an increased width as indicated by reference numeral 16. In this manner, as the particles move in a circular manner as shown in Fig. 3 around receptacle 10, the heavier materials are thrown outwardly by centrifugal force against the outer curved wall 17 for removal. These particles move downwardly under the influence of gravity into collection chamber 12 while the air stream moves upwardly through conduit 20. The finer particles move towards the center of the receptacle with the air stream and are separated from the larger particles in this manner.

It is thus first noted that, aside from the fact that Stebbins is directed to a cyclone apparatus, as is admittedly used in the prior art, it is not directed to the separation of steam from pulp or steam from any solid material for that matter. By using the apparatus of the present invention, the need for a cyclone is entirely eliminated. Indeed, no apparatus which separates particles by means of gravitational forces is now required in view of applicant's device, and in particular the conduit with a curved section which now ensures that the mixture of steam and fibers is separated therein solely under the influence of centrifugal force before it even enters applicant's feeding compartment containing a conveyor worm. In this manner, the heavy fraction of fibers is fed through the inlet peripherally for conveyance by the conveyor worm while the separated light fraction of steam is fed against the center of the elongated feeding compartment and removed through the outlet.

It is thus applicant's position that one of ordinary skill in the art, even if that person were to consider the Stebbins reference in connection with Nilsson, would at best determine that one should use a separate cyclone, as in the admitted state of the prior art, to effect such separation, and then merely supply the separated material to the digester or

elsewhere. In accordance with the present invention, however, the need for a cyclone is completely eliminated, and the steam/pulp mixture is added directly to the elongated feeding compartment, but having already been separated in the curved conduit portion hereof even as it enters that compartment. Thus, the present invention is essentially a combined steam separator and feeder apparatus which makes it possible to feed fibers to the subsequent unit, in this case a refiner, and substantially remove steam in the same apparatus, and it does so with the possibility of completely omitting the need to use a cyclone.

It is therefore respectfully submitted that all of the claims now set forth in this application possess the requisite novelty, utility and unobviousness to warrant their immediate allowance, and such action is therefore respectfully solicited. If, however, for any reason the Examiner still does not believe that such action can be taken at this time, it is respectfully requested that he telephone applicant's attorney at (908) 654-5000 in order to overcome any additional objections which he might have.

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If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

Dated: March 4, 2009 Respectfully submitted,

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